

WHAT IS CLAIMED IS:

1. A substrate support jig for removably holding a substrate when mounting electronic components on the substrate,
5 comprising:

a base member having a first surface and a second surface, the first surface and the second surface facing and substantially parallel to each other; and

an adhesive region having an adhesive layer with a
10 predetermined shape and a predetermined thickness formed on a side of the first surface, the adhesive layer being formed by applying an adhesive material with a predetermined unit tackiness, wherein

a land section is formed in the adhesive region such that a surface of the land section protrudes from a surface of
15 the adhesive layer by a predetermined amount, and

tackiness between the adhesive material and the base member is lower than tackiness between the adhesive material and the substrate.

20 2. The substrate support jig according to claim 1, wherein the base member has a depression formed between a main plane and the first surface, the main plane having a predetermined surface roughness and a predetermined flatness and being closer to the second surface than the first surface by a predetermined
25 distance, and

the adhesive layer is formed by filling the adhesive material in the depression other than the land section.

3. The substrate support jig according to claim 2, wherein
5 the base member has through holes penetrating therethrough, the through holes each having a first opening in the surface of the land section and a second opening on a side of the second surface.

4. The substrate support jig according to claim 2, wherein
10 the adhesive layer is formed in such a shape that the substrate can be held at a non-lead section other than a lead section thereof.

5. The substrate support jig according to claim 2, wherein
flatness of the surface of the adhesive layer is substantially
15 the same as flatness of the main plane, and the substrate is held to the adhesive layer with substantially the same flatness as the flatness of the main plane.

6. The substrate support jig according to claim 1, wherein
20 a distance between the first surface and the second surface is selected from a range of 2 mm to 4 mm.

7. The substrate support jig according to claim 2, wherein
a distance between the main plane and the second surface is selected
25 from a range of 0.1 mm to 0.6 mm.

8. The substrate support jig according to claim 1, wherein a hardness of the adhesive material is selected from a range of 20 to 50 Hs.

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9. The substrate support jig according to claim 1, wherein the adhesive material has a heat resistance that withstands temperatures exceeding a heating temperature at which a bonding material melts, the bonding material bonding the electronic components to the substrate.

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10. The substrate support jig according to claim 9, wherein the temperatures exceeding the heating temperature are 185 C and higher.

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11. The substrate support jig according to claim 1, wherein the adhesive material has abrasion resistance.

12. The substrate support jig according to claim 1, wherein the base member has positioning marks provided thereon and used to position the substrate.

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13. A circuit board production apparatus for producing an electronic circuit board by mounting electronic components on a substrate, the apparatus comprising:

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an adhesion apparatus for pressing the substrate against
a substrate support jig for temporary adhesion;

a bonding-material supply apparatus for applying a
bonding material for bonding the electronic components to the
5 temporarily adhered substrate;

a component mounting apparatus for mounting the
electronic components to the applied bonding material;

a heating apparatus for heating the bonding material
having the electronic components mounted thereto, to bond the
10 electronic components to the substrate; and

a substrate removing apparatus for peeling the substrate
having the electronic components bonded thereto off the substrate
support jig, wherein

the substrate support jig includes:

15 a base member having a first surface and a second surface,
the first surface and the second surface facing and substantially
parallel to each other; and

an adhesive region having an adhesive layer with a
predetermined shape and a predetermined thickness formed on a side
20 of the first surface, the adhesive layer being formed by applying
an adhesive material with a predetermined unit tackiness, wherein

a land section is formed in the adhesive region such
that a surface of the land section protrudes from a surface of
the adhesive layer by a predetermined amount, and

25 tackiness between the adhesive material and the base

member is lower than tackiness between the adhesive material and the substrate.

14. The circuit board production apparatus according
5 to claim 13, wherein the heating apparatus includes a heating table for heating the base member by bringing the heating table into contact with the second surface.

15. The circuit board production apparatus according
10 to claim 13, wherein

the base member has positioning marks provided thereon for positioning, and the substrate has substrate-side marks provided thereon for positioning, and

the adhesion apparatus includes:

15 a holding member for sucking and holding an entire surface or substantially entire surface of the substrate;

a holding and pressing apparatus for pressing the sucked and held substrate against the adhesive region for temporary adhesion;

20 a recognition apparatus for recognizing the positioning marks and the substrate-side marks; and

a control apparatus for controlling an operation of the holding and pressing apparatus based on a result of the recognition.

25 16. The circuit board production apparatus according

to claim 13, wherein

the bonding-material supply apparatus includes:

a jig holding apparatus for holding and positioning the
substrate support jig having the substrate temporarily adhered
5 thereto; and

an application apparatus for placing a screen mask on
the positioned substrate and applying the bonding material to the
positioned substrate through the screen mask.

10 17. The circuit board production apparatus according
to claim 13, wherein

the component mounting apparatus includes:

a component supply apparatus for supplying the
electronic components to be mounted on the temporary adhered
15 substrate; and

a component holding apparatus for holding and mounting
the supplied electronic components on the substrate.

20 18. The circuit board production apparatus according
to claim 13, wherein

the base member has through holes penetrating
therethrough, the through holes each having a first opening in
the surface of the land section and a second opening on a side
of the second surface, and

25 the substrate removing apparatus includes:

removing pins placed so as to go into the through holes from the second openings and protrude from the first openings; and

a peeling driving apparatus for moving the removing pins
5 through the through holes relatively to the substrate support jig.

19. The circuit board production apparatus according to claim 18, wherein

the substrate removing apparatus further includes:

10 a substrate holding apparatus for holding the substrate having been peeled off the substrate support jig by movement of the removing pins.

20. The circuit board production apparatus according
15 to claim 18, wherein the removing pins are placed in an area corresponding to a no-component mounted portion of the temporarily adhered substrate where the electronic components are not being mounted.

20 21. The circuit board production apparatus according to claim 13, further comprising:

a cleaning apparatus for cleaning the adhesive material of the substrate support jig off which the substrate has been peeled.

25 22. The circuit board production apparatus according

to claim 21, wherein

the cleaning apparatus includes:

an adhesive-region cleaning cloth for removing dust from
the adhesive region; and

5 a moving apparatus for moving the cleaning cloth
relatively to the substrate support jig while bringing the cleaning
cloth into contact with the adhesive material.

23. An adhesion apparatus for allowing a substrate to
10 temporarily adhere to a substrate support jig, the adhesion
apparatus comprising:

a holding member for sucking and holding an entire
surface or substantially entire surface of the substrate;

a holding and pressing apparatus for pressing the held
15 substrate against the substrate support jig for temporary adhesion;

a recognition apparatus for recognizing positioning
marks and substrate-side marks when the holding and pressing
apparatus allows the substrate to temporarily adhere to the base
member, the positioning marks being provided on the substrate
20 support jig and used to position the substrate, and the
substrate-side marks being provided on the substrate and used to
position the substrate; and

a control apparatus for controlling an operation of the
holding and pressing apparatus based on a result of the recognition,
25 wherein

the substrate support jig includes:

a base member having a first surface and a second surface,
the first surface and the second surface facing and substantially
parallel to each other; and

5 an adhesive region having an adhesive layer with a
predetermined shape and a predetermined thickness formed on a side
of the first surface, the adhesive layer being formed by applying
an adhesive material with a predetermined unit tackiness, wherein

a land section is formed in the adhesive region such
10 that a surface of the land section protrudes from a surface of
the adhesive layer by a predetermined amount,

tackiness between the adhesive material and the base
member is lower than tackiness between the adhesive material and
the substrate, and

15 the base member has positioning marks provided thereon
for positioning, and the substrate has substrate-side marks
provided thereon for positioning.

24. A circuit board production apparatus for producing
20 an electronic circuit board by mounting electronic components on
a substrate, the apparatus comprising:

an adhesion apparatus for allowing the substrate to
temporarily adhere to a substrate support jig; and

a substrate removing apparatus for peeling the
25 temporarily adhered substrate off the substrate support jig,

wherein

the substrate support jig includes:

a base member having a first surface and a second surface,
the first surface and the second surface facing and substantially
5 parallel to each other; and

an adhesive region having an adhesive layer with a
predetermined shape and a predetermined thickness formed on a side
of the first surface, the adhesive layer being formed by applying
an adhesive material with a predetermined unit tackiness, wherein

10 a land section is formed in the adhesive region such
that a surface of the land section protrudes from a surface of
the adhesive layer by a predetermined amount,

tackiness between the adhesive material and the base
member is lower than tackiness between the adhesive material and
15 the substrate,

the base member has through holes penetrating
therethrough, the through holes each having a first opening in
the surface of the land section and a second opening on a side
of the second surface, and

20 the substrate removing apparatus includes:

removing pins placed so as to go into the through holes
from the second openings;

a peeling driving apparatus for moving the removing pins
through the through holes relatively to the substrate support jig
25 so as to push the temporarily adhered substrate; and

a substrate holding apparatus for holding the substrate having been peeled off the substrate support jig by movement of the removing pins.